



## User Manual

# Mini 3G 7.2Mbps USB Router

DWR-510

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# Preface

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# Package Contents

- D-Link DWR-510 Mini 3G 7.2Mbps USB Router
- Manual on the device



# System Requirements

- A compatible (U)SIM card with service.\*
- Computers with Windows®, Macintosh®, or Linux-based operating systems with an installed Ethernet adapter
- Internet Explorer Version 6.0 or Netscape Navigator™ Version 6.0 and above (for configuration)

\*Subject to services and service terms available from your carrier.

# Introduction

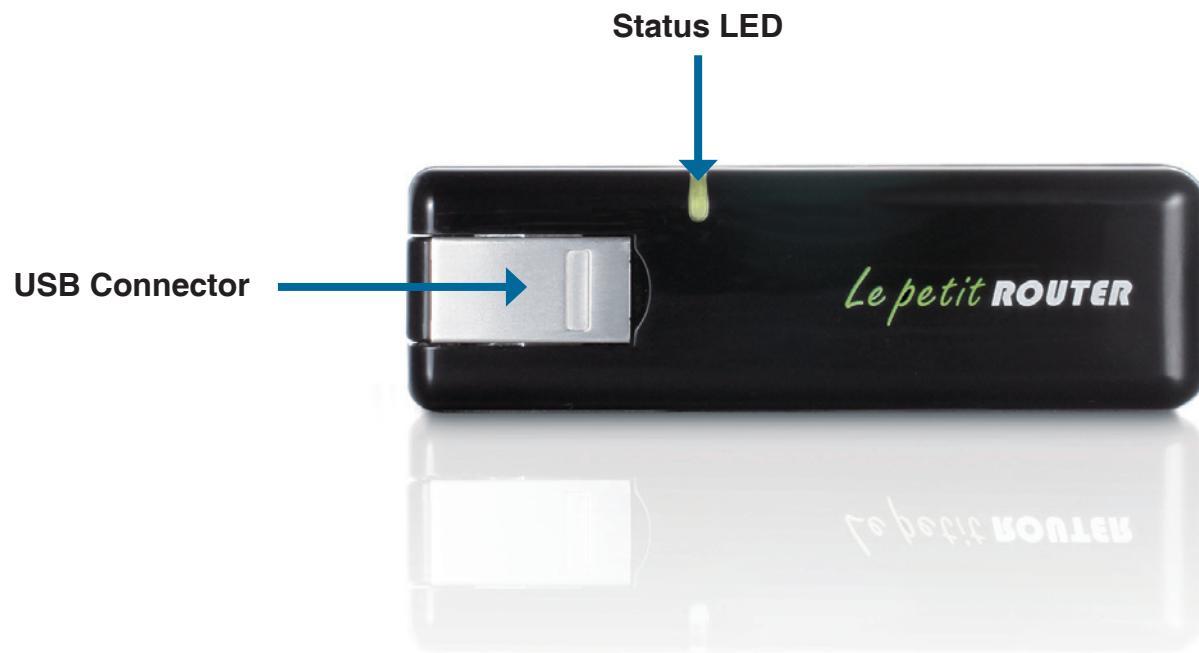
The D-Link DWR-510 Mini 3G 7.2Mbps USB Router is a very compact 3G router and dongle, slim and small enough to carry in a pocket. It allows users to take full advantage of HSUPA-compatible 3G networks for portable use anywhere or anytime while on the go.

The DWR-510 can function in either Wi-Fi router mode or 3G USB modem mode. When in Wi-Fi router mode, the device allows Wi-Fi capable devices like smart phones, portable gaming devices, notebooks, or digital cameras access to 3G networks via a wireless connection. The DWR-510 can share its 3G connection with up to 10 Wi-Fi clients.

When using the D-Link DWR-510 Mini 3G 7.2Mbps USB Router as a 3G USB modem, you can not only keep your PC connected to 3G network, but also turn off your PC's Wi-Fi radio in order to save battery power.

# Hardware Overview

## Side Panel



| Port/LED             | Function   |                 |                  |  |
|----------------------|--|-----------------|------------------|--|
| <b>USB Connector</b> | Connects to your computer's USB port.            |                 |                  |  |
| <b>Status LED</b>    | Indicates the status of your network connection. |                 |                  |  |
| Color                | Solid  | Blinking (Fast) | Blinking (Slow)* |  |
| Blue                 | WCDMA/HSDPA/HSUPA Connected                      | Transmitting    | Dial on demand   |  |
| Green                | GSM/GPRS Connected                               | Transmitting    | Dial on demand   |  |
| Red                  | SIM error/No service                             | -               | -                |  |

\* This applies when the device is in standby mode.

# Wireless Installation Considerations

The DWR-510 can be accessed using a wireless connection from virtually anywhere within the operating range of your wireless network. Keep in mind, however, that the quantity, thickness and location of walls, ceilings, or other objects that the wireless signals must pass through, may limit the range. Ranges vary depending on the types of materials and background RF (radio frequency) noise in your home or office. The key to maximizing the wireless range is to follow these basic guidelines:

1. Minimize the number of walls and ceilings between the D-Link router and other network devices. Each wall or ceiling can reduce your adapter's range from 3 to 90 feet (1 to 30 meters).
2. Be aware of the direct line between network devices. A wall that is 1.5 feet thick (0.5 meters), at a 45-degree angle appears to be almost 3 feet (1 meter) thick. At a 2-degree angle it looks over 42 feet (14 meters) thick. Position devices so that the signal will travel straight through a wall or ceiling (instead of at an angle) for better reception.
3. Try to position access points, wireless routers, and computers so that the signal passes through open doorways and drywall. Materials such as glass, metal, brick, insulation, concrete and water can affect wireless performance. Large objects such as fish tanks, mirrors, file cabinets, metal doors and aluminum studs may also have a negative effect on range.
4. If you are using 2.4 GHz cordless phones, make sure that the 2.4 GHz phone base is as far away from your wireless device as possible. The base transmits a signal even if the phone is not in use. In some cases, cordless phones, X-10 wireless devices, and electronic equipment such as ceiling fans, fluorescent lights, and home security systems may dramatically degrade wireless connectivity.

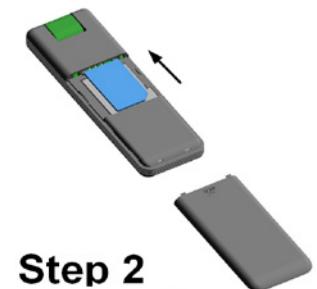
# Product Setup

## Installing the SIM Card

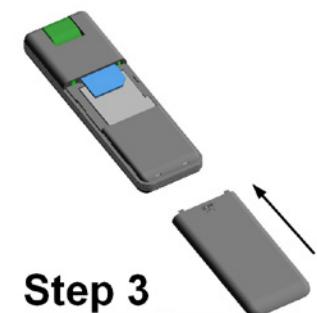
1. Remove the back cover of the USB Dongle.



2. Insert the SIM card with the gold contacts facing down. Make sure that you insert the SIM card in the right direction, with the notched edge facing away from the DWR-510's contacts.



3. Replace the back cover.



# Connection Setup

## Modem Mode

1. Move the router/modem selection switch to modem mode.
2. Connect the Mini 3G 7.2Mbps USB Router to your computer, the LED will blink green.
3. Follow the instructions to install the D-Link Connection Manager.
4. Enter the PIN code for the SIM card.
5. Click the “Connect” icon in the Connection Manager.
6. You can now use the DWR-510 Mini 3G 7.2Mbps USB Router as a 3G modem.

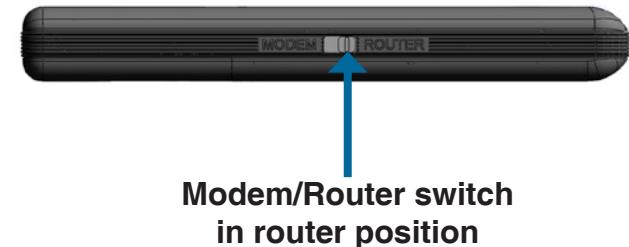
**Note:** You have to install the Connection Manager software when using the DWR-510 for the first time. After successful installation, you can configure USB modem and Wi-Fi router basic settings.



# Connection Setup

## Router Mode

1. Move the router/modem selection switch to router mode.
2. Connect the Mini 3G 7.2Mbps USB Router to your computer, the LED will blink green. Alternatively, you can connect the DWR-510 to a USB power adapter.
3. Find the Wi-Fi network with the SSID “dlink\_DWR-510” and connect to it.
4. You can now use the DWR-510 Mini 3G 7.2Mbps USB Router as a 3G router.



# Modem Mode: D-Link Connection Manager

When using Modem Mode, you will need to use the D-Link Connection Manager. It allows you to manage your 3G connection, and lets you send and receive SMS messages through a simple to use interface.

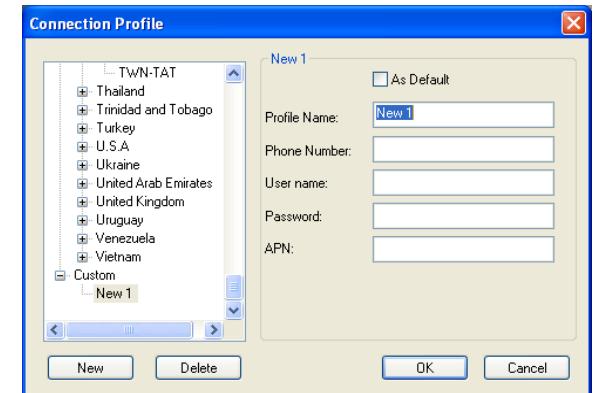
**Note:** These settings will only take effect when the DWR-510 is in Modem Mode.

## New Profile

Before starting, if the mobile service provider associated with your SIM card is listed in the preset profile list, you can directly connect to the desired network using its pre-defined profile.

You also can create your own profile by following the steps below:

1. Click the **Edit** button, then go to **Connection Profile**.
2. Click the **New** button to create a new profile.
3. Choose a **Profile Name**, then type in the **Phone Number**, **User Name**, **Password**, and **APN**. If you want to make this your default profile, check **As Default**. Click **OK** to continue.



Windows



Mac

# Establishing a Connection

You can click the Connect button to connect to the network via the default profile. Once connected, you can use the mobile service network to browse the Internet, send e-mail, send text messages, and perform other tasks online.



**Connect**

# Ending a Connection

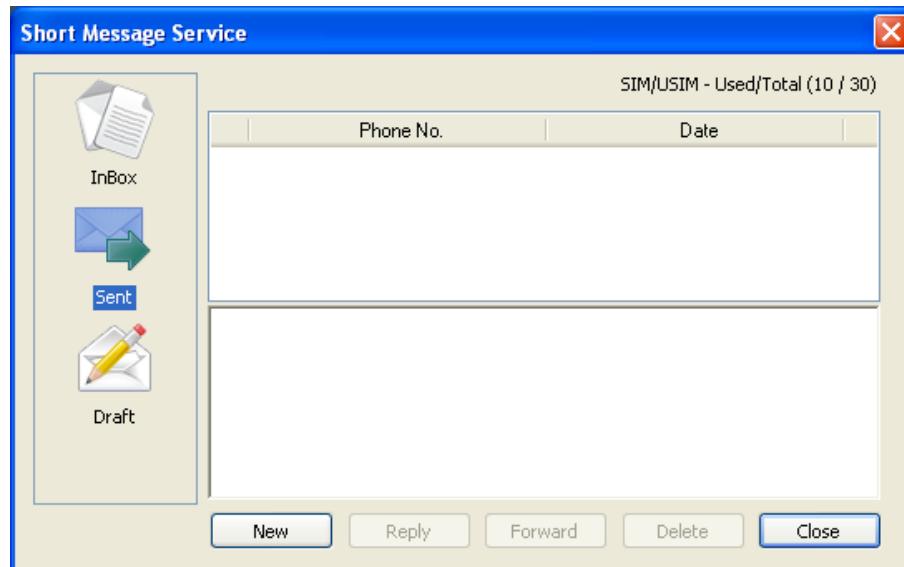
If you wish to disconnect, click the Connect button again.



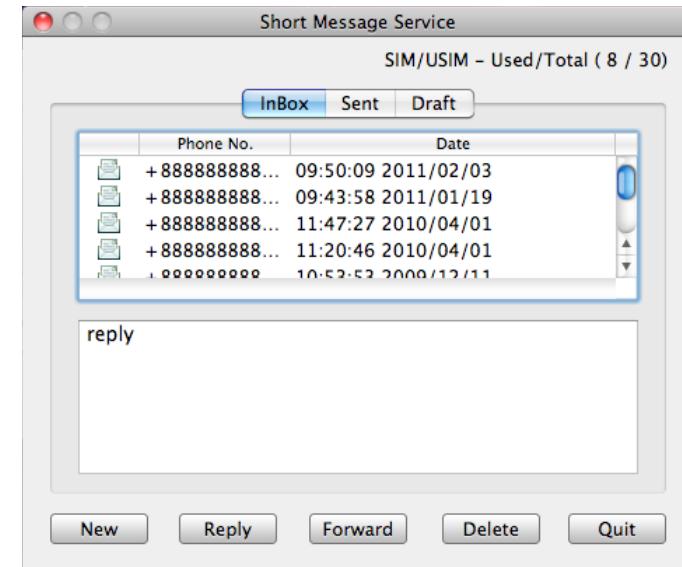
**Disconnect**

# Text Messaging (SMS)

The DWR-510 can be used to perform all the text messaging functions that can be done on a mobile phone such as sending, receiving, replying, forwarding and deleting.



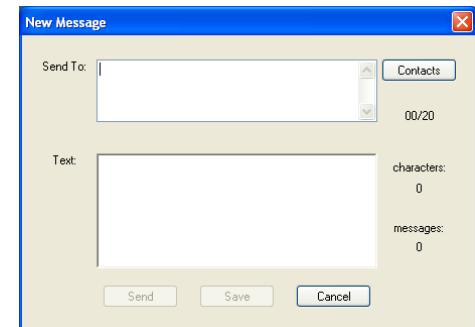
Windows



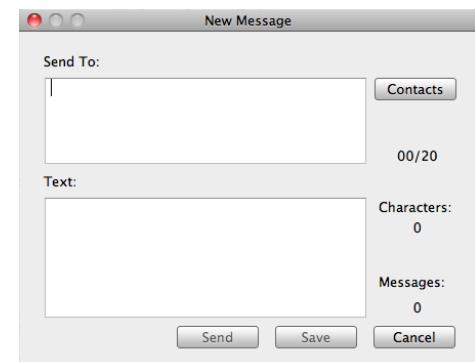
Mac

## New/Reply/Forward Text Message

1. Click the **SMS** button.
2. Click **New**, **Reply**, or **Forward**.
3. Enter the recipient's phone number or click **Contacts** to see the contacts stored to the SIM card. In the contacts window, click the box next to the recipients name and click **Add** to return to the New SMS window.
4. Enter a message to send.
5. Click **Send** to send the message.



Windows



Mac

## Deleting a Message

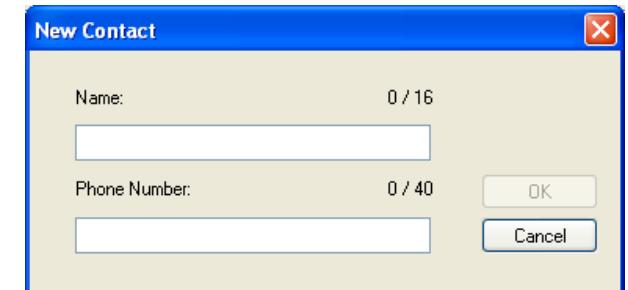
1. Click the **SMS** button.
2. Select the messages you want to delete and click **Delete**.
3. Click **Delete** to delete the selected messages.
4. Click **Yes** to confirm.

# Contact Management

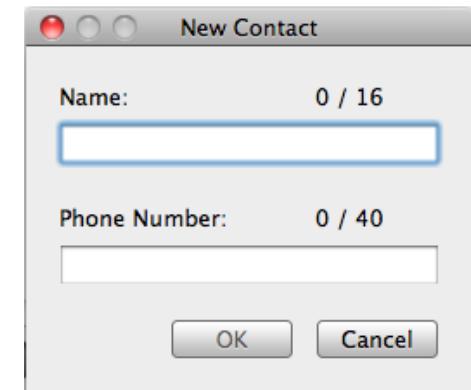
The DWR-510 contacts manager displays all the contacts on the SIM Card. Contacts can be added, edited, deleted and imported.

## Adding Contacts

1. Click the **Contacts** button.
2. Click the **New** button.
3. In the Add Contact window, enter the contact name and telephone number.
4. Click **OK** to add the contact.



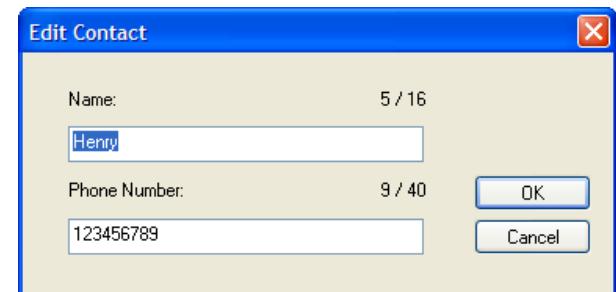
Windows



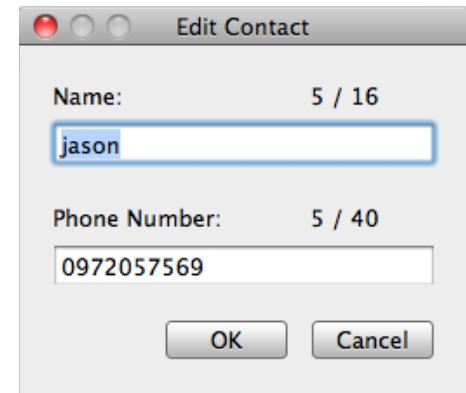
Mac

## Editing Contacts

1. Click the **Contacts** button.
2. Select the contact to edit.
3. Click the **Edit** button.
4. Modify the contacts details.
5. Click **OK** to save the changes.



Windows



Mac

## Deleting Contacts

1. Click the **Contacts** button.
2. Select the contact to delete and click the **Delete** button.
3. Click **Yes** to confirm the deletion.

## Importing vCards to Contacts

1. Click the **Contacts** button.
2. Click the **Import** button.
3. Select the source of the vCard(s).
4. Click **Open** to import the card(s).
5. After the import, a message will display the import information.  
Click **OK** to close the window.

## Exporting Contacts to vCards

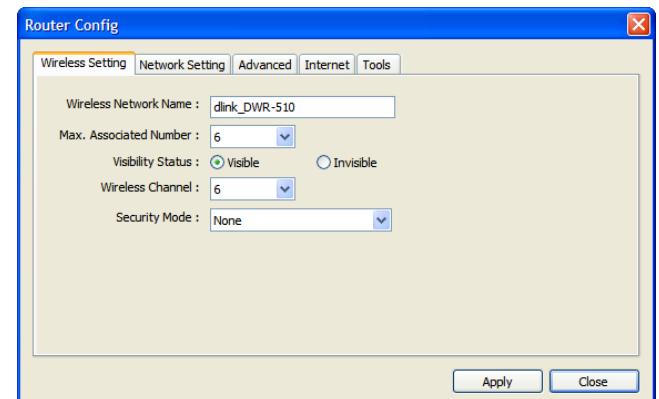
1. Click the **Contacts** button.
2. Click the **Export** button.
3. Select the destination to save the vCard(s).
4. Click **OK** to export the card(s).
5. After the export, a message will be displayed. Click OK to close.

# Router Mode: D-Link Connection Manager (Windows only)

The D-Link Mobile Connection Manager allows you to conveniently adjust options such as the wireless or network settings for the DWR-510. You can also access these settings by using the web-based configuration utility(see page 18).

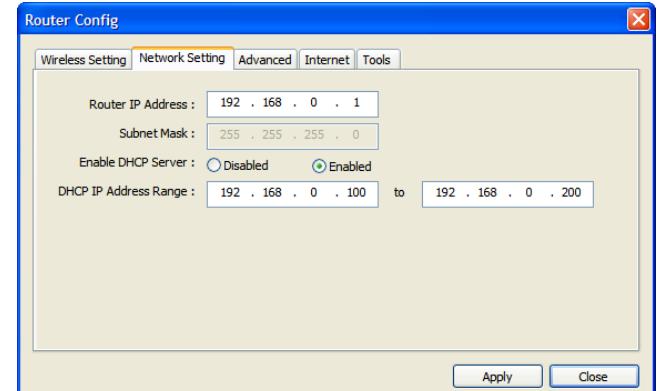
## Wireless Settings

1. Enter a wireless network name. When connecting other devices to your wireless network, this is the name you will need to search for.
2. Select the maximum number of devices to allow to connect to your wireless network.
3. Set the visibility status to **Visible** or **Invisible**.
4. Choose the wireless channel and security mode.
5. Click **Apply** to save the settings.



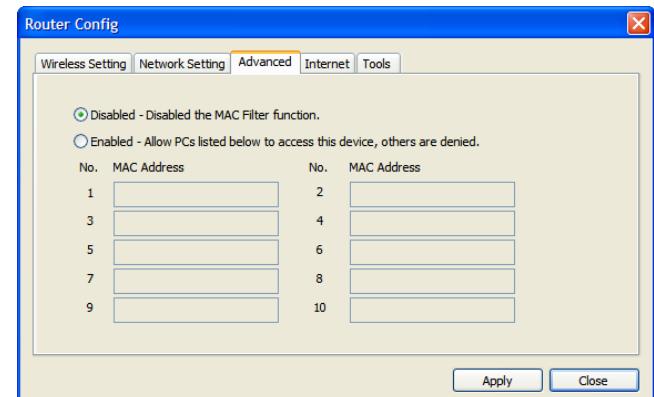
## Network Settings

1. Enter the router IP address and subnet mask.
2. If you want to enable DHCP Server, check **Enabled**. Otherwise, check **Disabled**.
3. Enter values for the DHCP IP address range.
4. Click **Apply** to save the settings.



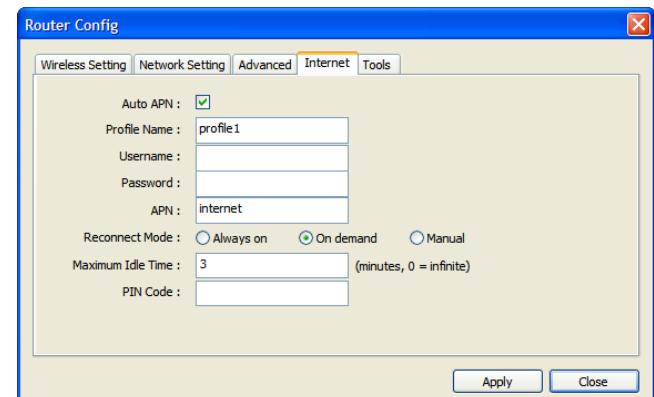
# Advanced Settings

1. Check **Enabled**, if you want to enable MAC address filtering. Otherwise, check **Disabled**.
2. Enter up to 10 MAC addresses that can access the device. Only these devices will be allowed to access your wireless network; all other devices will be denied access.
3. Click **Apply** to save the settings.



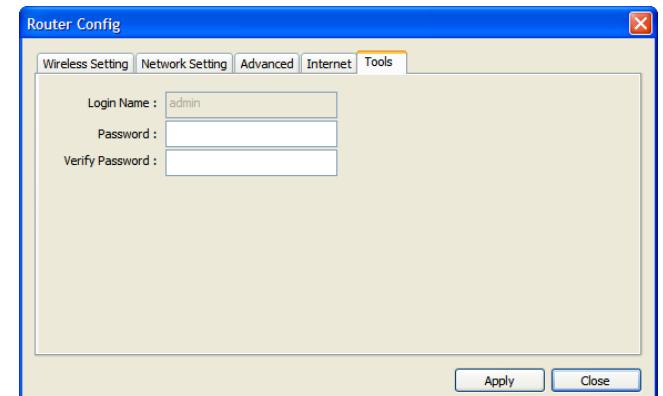
# Internet Settings

1. If you want to enable Auto APN, tick the check box.
2. Enter a profile name, username, password, and APN description.
3. Set the Reconnect Mode to **Always On**, **On Demand**, or **Manual**.
4. Enter a maximum idle time in minutes or choose 0 for infinite.
5. Enter a PIN code.
6. Click **Apply** to save the settings.



# Tools

1. If you want to change the password for the DWR-510, enter a new password in the text box.
2. Enter the password again to verify it.
3. Click **Apply** to save the settings.



# Router Mode: Web-based Configuration Utility

When using Router Mode, you can use the web-based configuration utility to manage your wireless network. It allows you to set wireless encryption, control access to the wireless network, set up an FTP server for file sharing, and more.

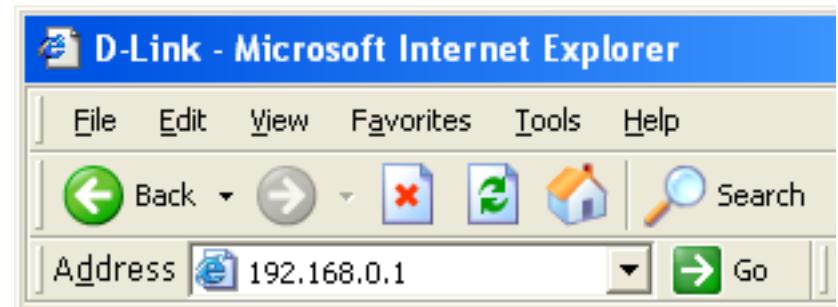
**Note:** The web-based configuration utility and its associated features are for Router Mode only.

To access the configuration utility, open a web-browser such as Internet Explorer and enter the IP address of the router (192.168.0.1).

Type **admin** in the **User Name** field and then enter your password. Leave the password blank by default.

Click the **Login** button to log in to the router.

If you get a **Page Cannot be Displayed** error, please refer to the **Troubleshooting** section for assistance.



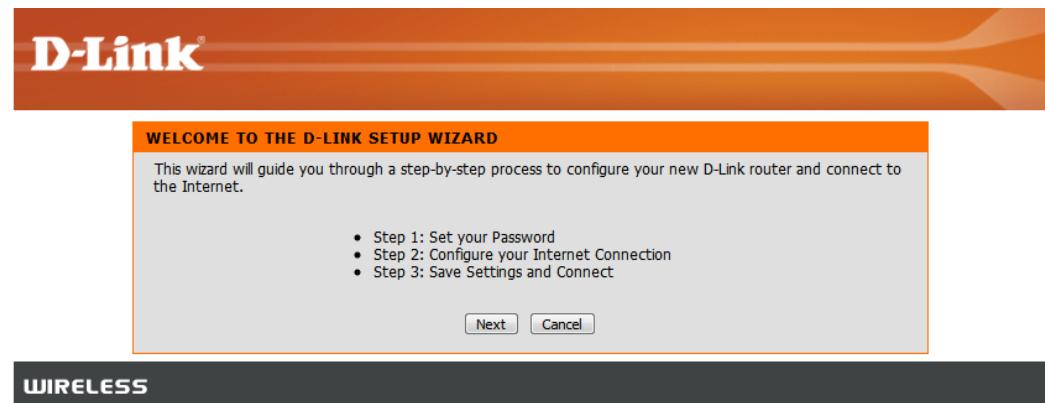
# Internet Connection Setup Wizard

Once logged into the web interface of the router, the **Setup > Internet** page will appear. Click the **Internet Connection Setup Wizard** button to quickly configure your router using the setup wizard.

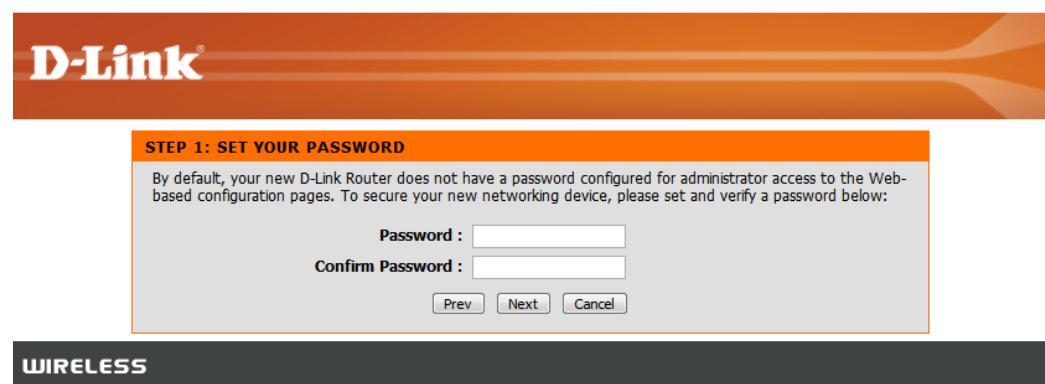
If you want to enter your settings without running the wizard, click **Manual Internet Connection Setup** and skip to “Manual Internet Configuration”.

The screenshot shows a web-based configuration interface for a D-Link router. The top section, titled 'INTERNET CONNECTION', contains a note: 'If you are configuring the device for the first time, we recommend that you click on the Internet Connection Setup Wizard button and follow the instructions on the screen. If you wish to modify or configure the device settings manually, click the Manual Internet Connection Setup button.' Below this is the 'INTERNET CONNECTION SETUP WIZARD' section, which includes a note: 'If you would like to utilize our easy to use Web-based Wizard to assist you in connecting your new D-Link Systems Router to the Internet, click on the button below.' A blue button labeled 'Internet Connection Setup Wizard' is visible. A note below the wizard section states: 'Note: Before launching the wizard, please make sure you have followed all steps outlined in the Quick Installation Guide included in the package.' The final section is 'MANUAL INTERNET CONNECTION OPTIONS', which includes a note: 'If you would like to configure the Internet settings of your new D-Link Router manually, then click on the button below.' A blue button labeled 'Manual Internet Connection Setup' is visible.

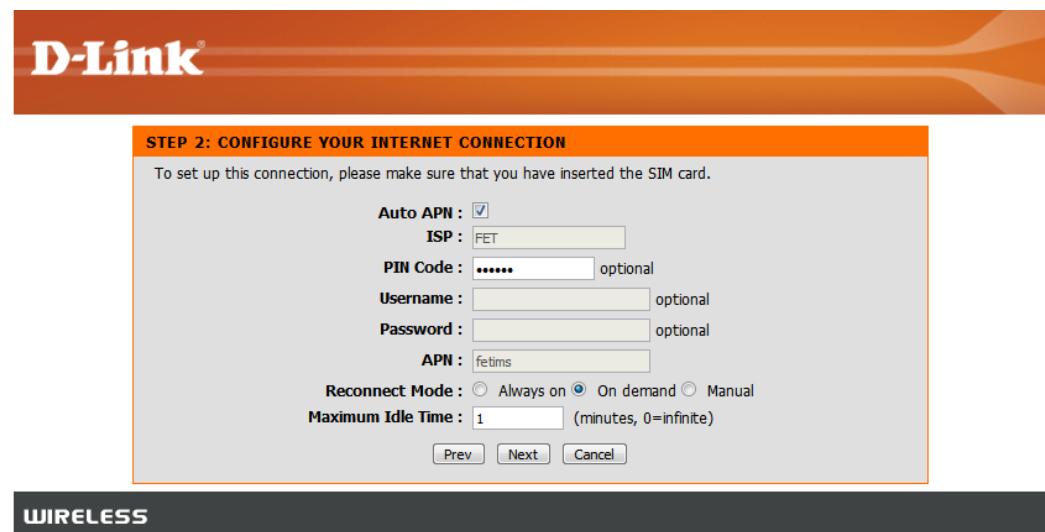
Click **Next** to continue.



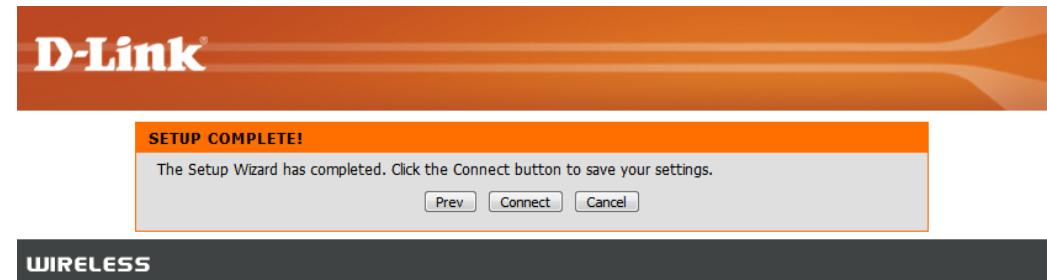
Create a new password and then click **Next** to continue.



Configure your 3G Internet Connection settings and then click **Next** to continue.



Click **Connect** to save your settings. Once the router has finished rebooting, click **Continue**. Please allow 1-2 minutes to connect.



# Internet Setup

This section lets you enter the Internet connection information provided by your Internet Service Provider (ISP).

**Auto APN:** If you want to enable Auto APN, tick the check box.

**ISP:** Enter the name of your ISP.

**Username:** Enter a username.

**Password:** Enter a password.

**APN:** Enter the APN description.

**Reconnect Mode:** Set to **Always On**, **On Demand**, or **Manual**.

**Maximum Idle Time:** Enter a maximum idle time in minutes. Choose 0 for infinite.

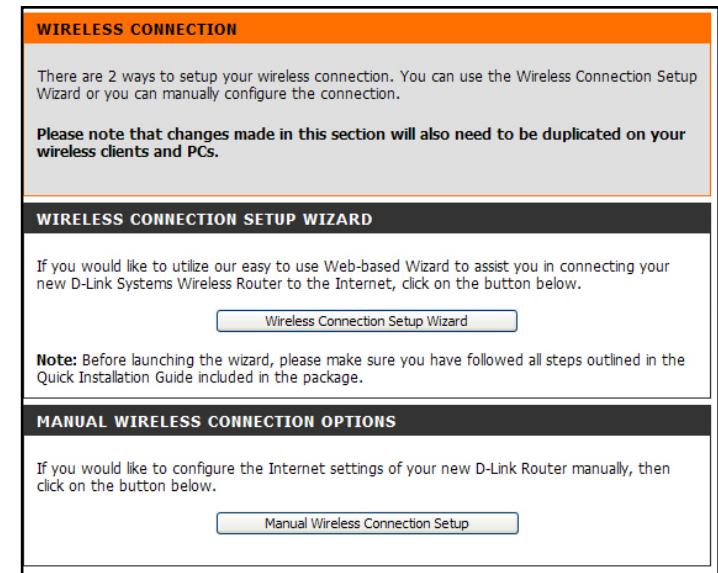
**SIM Card Settings:** Enter the PIN code for the SIM card.

The screenshot shows the 'WAN' configuration page of the D-Link DWR-510 router's web interface. The page has a header with the D-Link logo and navigation tabs for SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. A 'Helpful Hints...' box on the right provides instructions for configuring the router to access the Internet. The 'WAN' section is titled 'WWAN INTERNET CONNECTION' and contains fields for 'Auto APN' (checked), 'ISP' (fet), 'Username', 'Password', and 'APN' (fetims). It also includes 'Reconnect Mode' options (Always on, On demand, Manual) and a 'Maximum Idle Time' field (1 minute). Below this is a 'SIM CARD SETTINGS' section with a 'PIN Code' field.

# Wireless Settings

If you want to configure the wireless settings on your router using the wizard, click **Wireless Connection Setup Wizard**.

If you want to manually configure the wireless settings on your router click **Manual Wireless Connection Setup** and refer to “**Manual Wireless Connection Setup**”.



Click the **Wireless Connection Setup Wizard** button to view the **Wireless Security Setup Wizard** menu. The Welcome menu lists the steps used for setup. Click on the **Next** button to continue.



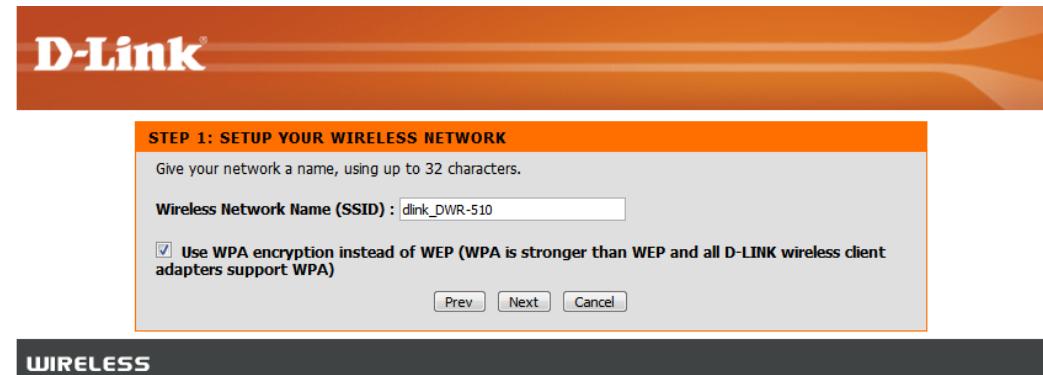
Enter the SSID (Service Set Identifier). The SSID is the name of your wireless network. Create a name using up to 20 characters. The SSID is case-sensitive.

It is recommended that you tick the checkbox to use WPA wireless encryption to secure your wireless network.

Click **Next** to continue.

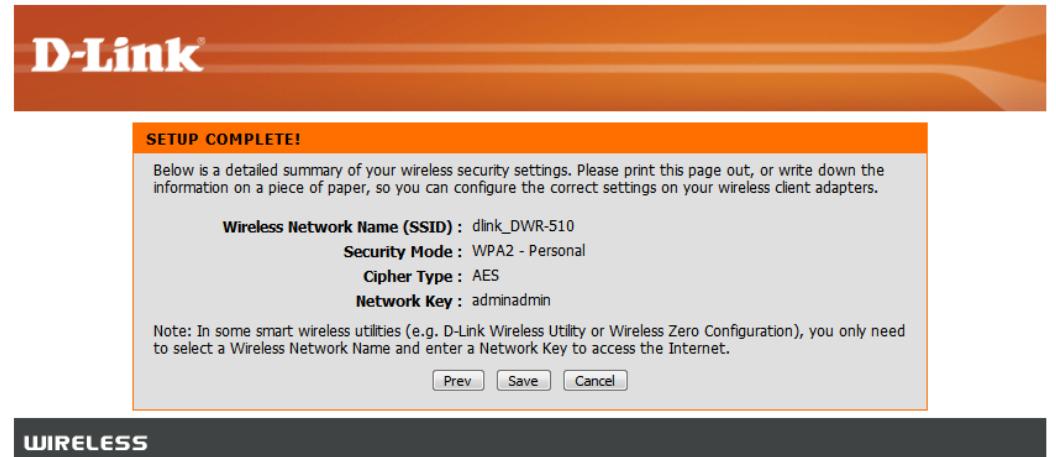
Type a password that you would like to use for your wireless network in the **Network Key:** entry field.

Click **Next** to continue.



The final menu appears to indicate that setup is complete.

You should write down the **Wireless Network Name (SSID)** and **Network Key** for future reference when connecting other wireless devices to your wireless network.



Click **Save** to finish the Security Wizard.

# Manual Wireless Setup

Use this section to configure the wireless settings for your D-Link router.

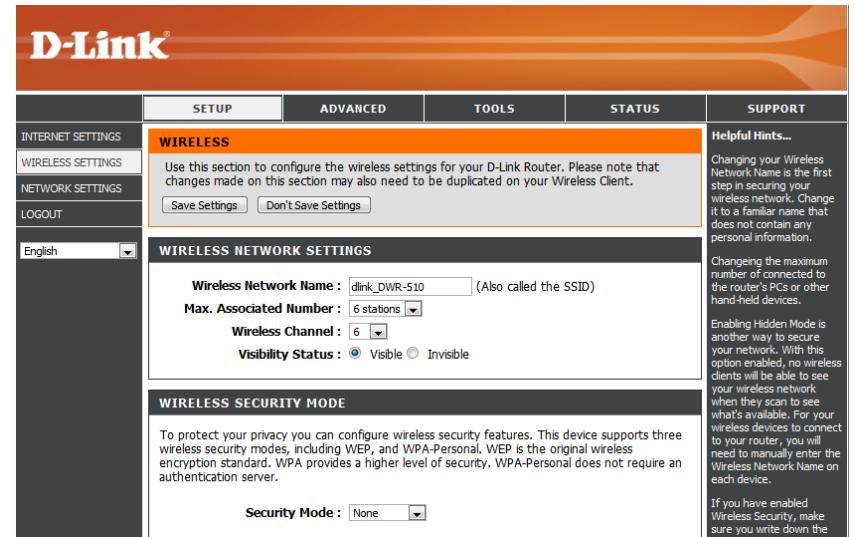
**Wireless Network Name:** Enter a wireless network name.

**Max. Associated Number:** Set the maximum number of clients that can connect wirelessly.

**Wireless Channel:** Choose the wireless channel.

**Visibility Status:** Set the visibility status to **Visible** or **Invisible**.

**Security Mode:** Choose the wireless security mode.



# Network Setup

Use this section to configure the internal network settings of your router.

**Router IP Address:** Enter the router IP address.

**Subnet Mask:** Enter the subnet mask.

**Enable DHCP Server:** If you want to enable DHCP Server, check **Enabled**. Otherwise, check **Disabled**.

**DHCP IP Address Range:** Enter values for the DHCP IP address range.

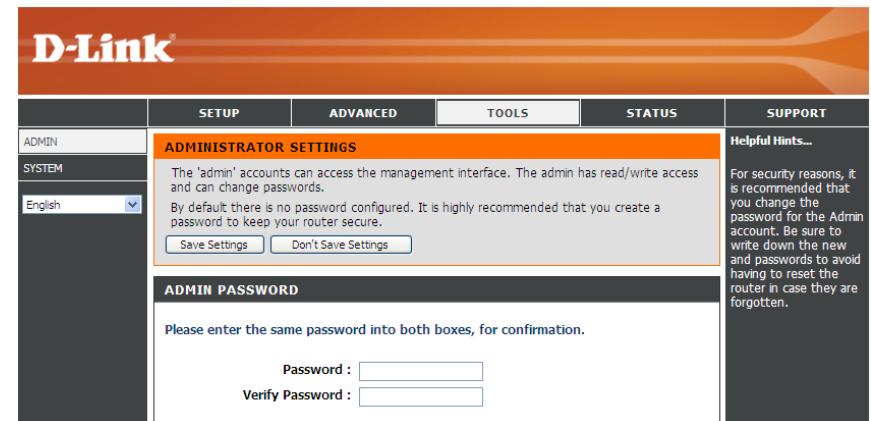


# Administrator Settings

Use this section to change the password for the Administrator account.

**Password:** Enter a password.

**Verify Password:** Verify the password.



# Factory Reset

Use this section to restore the router to the factory default settings.

**Restore To Factory Default:** Click this button to restore all settings to the factory defaults.



# Device Information

All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.

**General:** Displays the firmware version.

**WAN:** Displays information about the WAN.

**LAN:** Displays information about the LAN.

**DEVICE INFORMATION**

All of your Internet and network connection details are displayed on this page. The firmware version is also displayed here.

**GENERAL**

Firmware Version : 1.00  
Signal Strength : 100%

**WAN**

Connection Status : Connected

Network Type : GPRS  
ISP : FET  
Connected Time : 5 minutes 17 seconds  
IP : 114.140.27.124  
DNS : 210.241.192.201 168.95.1.1  
Received Packets : 1258  
Transmitted Packets : 1083

**LAN**

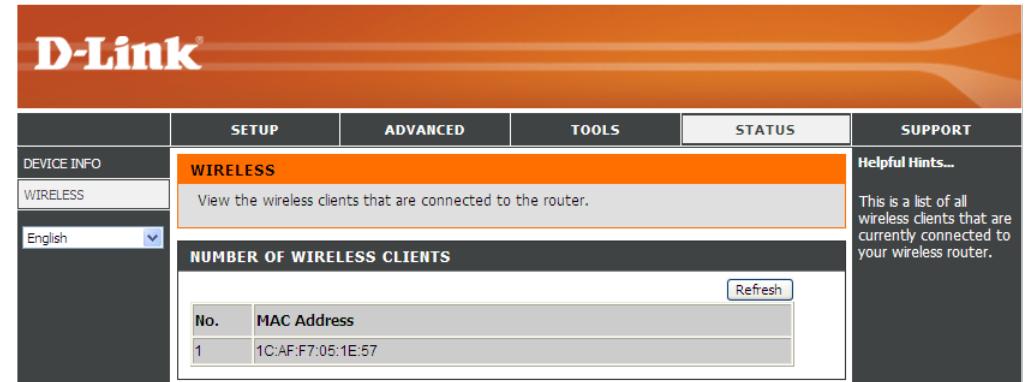
IP : 192.168.0.1  
Subnet Mask : 255.255.255.0  
DHCP Server : Enabled  
Address Range : 192.168.0.100 - 192.168.0.200  
MAC Address : 48:5d:60:a3:72:1a  
SSID : dlink\_DWR-510  
Channel : 6  
Mode : 802.11 B/G/N  
Encryption : None

Helpful Hints...  
All of your WAN and LAN connection details are displayed here.

# Wireless Information

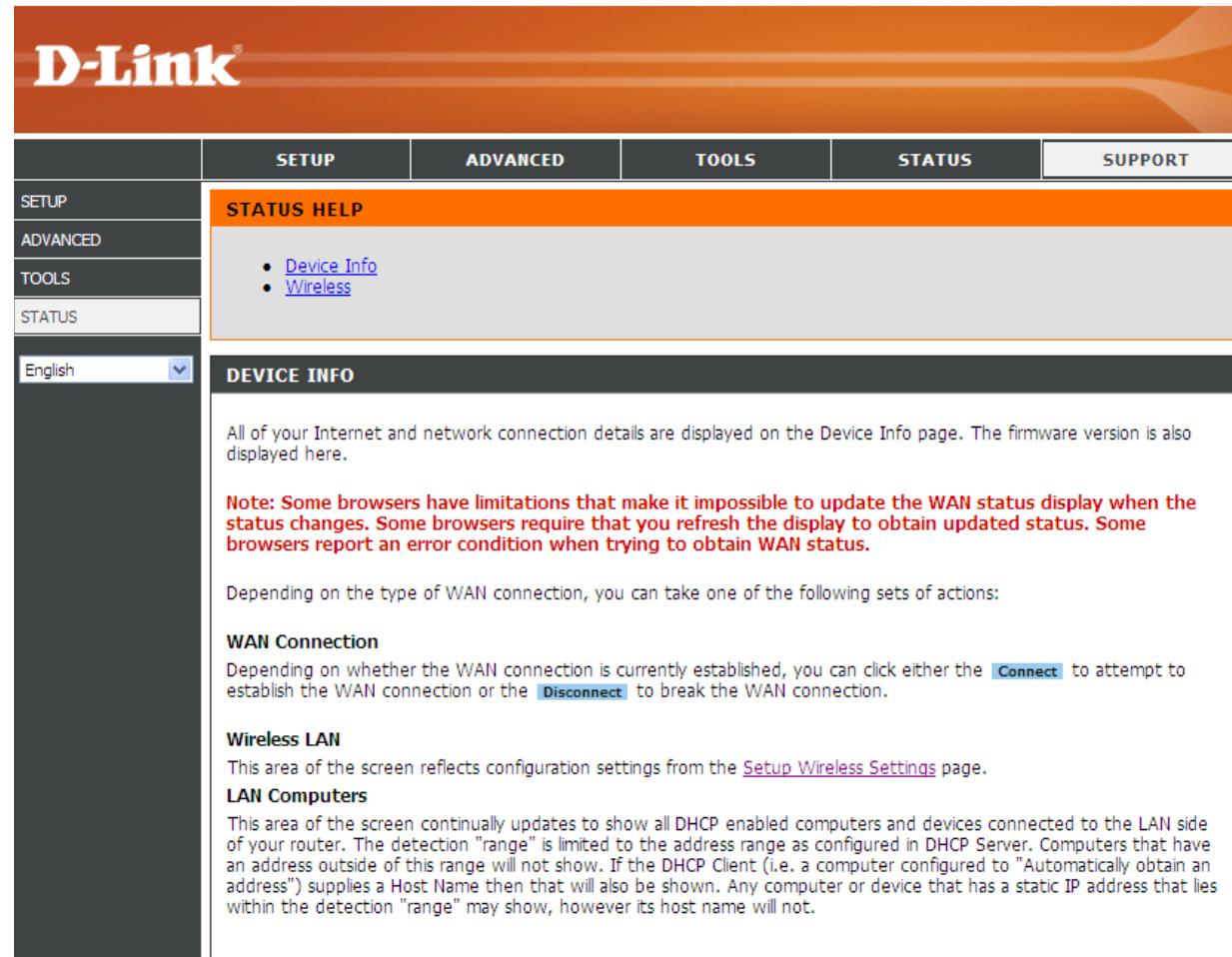
All of your wireless connection details are displayed on this page.

**Number of wireless clients:** Displays the wireless clients and their MAC addresses.



The screenshot shows the D-Link DWR-510 router's configuration interface. The top navigation bar includes links for DEVICE INFO, SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The left sidebar shows DEVICE INFO, WIRELESS (selected), and a language dropdown set to English. The main content area is titled 'WIRELESS' and displays a message: 'View the wireless clients that are connected to the router.' Below this is a table titled 'NUMBER OF WIRELESS CLIENTS' with one entry: No. 1 and MAC Address 1C:AF:F7:05:1E:57. A 'Refresh' button is located in the top right corner of this table. To the right of the main content area is a 'Helpful Hints...' section with the text: 'This is a list of all wireless clients that are currently connected to your wireless router.'

# Support



The screenshot shows the D-Link DWR-510 router's configuration interface. The top navigation bar includes links for SETUP, ADVANCED, TOOLS, STATUS, and SUPPORT. The SUPPORT link is currently selected, highlighted in orange. The left sidebar contains links for SETUP, ADVANCED, TOOLS, and STATUS, with STATUS being the active tab. A language dropdown menu shows "English" is selected. The main content area is titled "STATUS HELP" and contains two bullet points: "Device Info" and "Wireless". Below this, a section titled "DEVICE INFO" provides information about the router's Internet and network connection details. It includes a note about browser limitations regarding WAN status updates and instructions for managing WAN and Wireless connections. The "WAN Connection" section allows users to attempt to establish or disconnect the WAN connection. The "Wireless LAN" section reflects configuration settings from the "Setup Wireless Settings" page. The "LAN Computers" section displays a list of connected devices, showing their IP addresses and host names. The entire interface has a clean, modern design with a white background and a dark sidebar.

# Wireless Security

This section will show you the different levels of security you can use to protect your data from intruders. The DWR-510 offers the following types of security:

- WPA2 (Wi-Fi Protected Access 2)
- WPA (Wi-Fi Protected Access)
- WEP (Wired Equivalent Privacy)
- WPA2-PSK (Pre-Shared Key)
- WPA-PSK (Pre-Shared Key)

## What is WEP?

WEP stands for Wired Equivalent Privacy. It is based on the IEEE 802.11 standard and uses the RC4 encryption algorithm. WEP provides security by encrypting data over your wireless network so that it is protected as it is transmitted from one wireless device to another.

To gain access to a WEP network, you must know the key. The key is a string of characters that you create. When using WEP, you must determine the level of encryption. The type of encryption determines the key length. 128-bit encryption requires a longer key than 64-bit encryption. Keys are defined by entering in a string in HEX (hexadecimal - using characters 0-9, A-F) or ASCII (American Standard Code for Information Interchange – alphanumeric characters) format. ASCII format is provided so you can enter a string that is easier to remember. The ASCII string is converted to HEX for use over the network. Four keys can be defined so that you can change keys easily.

# Configure WEP

It is recommended to enable encryption on your wireless router before your wireless network adapters. Please establish wireless connectivity before enabling encryption. Your wireless signal may degrade when enabling encryption due to the added overhead.

1. Log into the web-based configuration by opening a web browser and entering the IP address of the router (192.168.0.1). Click on **Wireless Settings** on the left side.
2. Next to **Security Mode**, select **WEP**.
3. Next to **WEP Key 1**, enter a WEP key that you create. Make sure you enter this key exactly on all your wireless devices. You may enter up to 4 different keys.
7. Click **Save Settings** to save your settings. If you are configuring the router with a wireless adapter, you will lose connectivity until you enable WEP on your adapter and enter the same WEP key as you did on the router.

The screenshot shows two configuration pages from the D-Link DWR-510 router's web interface.

**WIRELESS SECURITY MODE** (Top Section):

To protect your privacy you can configure wireless security features. This device supports three wireless security modes, including WEP, and WPA-Personal. WEP is the original wireless encryption standard. WPA provides a higher level of security. WPA-Personal does not require an authentication server.

Security Mode : **WEP**

**WEP** (Bottom Section):

WEP is the wireless encryption standard. To use it you must enter the same key(s) into the router and the wireless stations. For 64 bit keys you must enter 10 hex digits into each key box. For 128 bit keys you must enter 26 hex digits into each key box. A hex digit is either a number from 0 to 9 or a letter from A to F. For the most secure use of WEP set the authentication type to "Shared Key" when WEP is enabled.

You may also enter any text string into a WEP key box, in which case it will be converted into a hexadecimal key using the ASCII values of the characters. A maximum of 5 text characters can be entered for 64 bit keys, and a maximum of 13 characters for 128 bit keys.

If you choose the WEP security option this device will **ONLY** operate in **Legacy Wireless mode (802.11B/G)**. This means you will **NOT** get 11N performance due to the fact that WEP is not supported by the Draft 11N specification.

WEP Key 1 :    
WEP Key 2 :    
WEP Key 3 :    
WEP Key 4 :

# What is WPA?

WPA, or Wi-Fi Protected Access, is a Wi-Fi standard that was designed to improve the security features of WEP (Wired Equivalent Privacy).

The 2 major improvements over WEP:

- Improved data encryption through the Temporal Key Integrity Protocol (TKIP). TKIP scrambles the keys using a hashing algorithm and, by adding an integrity-checking feature, ensures that the keys haven't been tampered with. WPA2 is based on 802.11i and uses Advanced Encryption Standard (AES) instead of TKIP.
- User authentication, which is generally missing in WEP, through the extensible authentication protocol (EAP). WEP regulates access to a wireless network based on a computer's hardware-specific MAC address, which is relatively simple to be sniffed out and stolen. EAP is built on a more secure public-key encryption system to ensure that only authorized network users can access the network.

WPA-PSK/WPA2-PSK uses a passphrase or key to authenticate your wireless connection. The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?\*&\_) and spaces. This key must be the exact same key entered on your wireless router or access point.

WPA/WPA2 incorporates user authentication through the Extensible Authentication Protocol (EAP). EAP is built on a more secure public key encryption system to ensure that only authorized network users can access the network.

# Configure WPA-PSK/WPA2-PSK

It is recommended to enable encryption on your wireless router before your wireless network adapters. Please establish wireless connectivity before enabling encryption. Your wireless signal may degrade when enabling encryption due to the added overhead.

1. Log into the web-based configuration by opening a web browser and entering the IP address of the router (192.168.0.1). Click on **Wireless Settings** on the left side.
2. Next to *Security Mode*, select **WPA-PSK** or **WPA2-PSK**.
3. Next to *Pre-Shared Key*, enter a key (passphrase). The key is an alpha-numeric password between 8 and 63 characters long. The password can include symbols (!?\*&\_) and spaces. Make sure you enter this key exactly the same on all other wireless clients.
4. Click **Save Settings** to save your settings. If you are configuring the router with a wireless adapter, you will lose connectivity until you enable WPA-PSK (or WPA2-PSK) on your adapter and enter the same passphrase as you did on the router.

The screenshot shows a configuration page for wireless security settings. It includes sections for 'WIRELESS SECURITY MODE', 'WPA', and 'PRE-SHARED KEY'.

**WIRELESS SECURITY MODE:** A dropdown menu is set to 'WPA-PSK'. A note explains that the device supports three modes: WEP, WPA-Personal, and WPA2-PSK. WPA provides higher security than WEP, and WPA-Personal does not require an authentication server.

**WPA:** A note states that WPA or WPA2 mode achieves a balance of security and compatibility. It uses WPA for legacy clients and WPA2 for modern ones, using AES (CCMP) as the cipher. Legacy stations are denied access if WPA2 is selected. A note also says that WPA2 Only mode is for best security.

**PRE-SHARED KEY:** A text input field is labeled 'Pre-Shared Key :'. A note specifies that the key should be 8-63 characters long and not a common phrase.

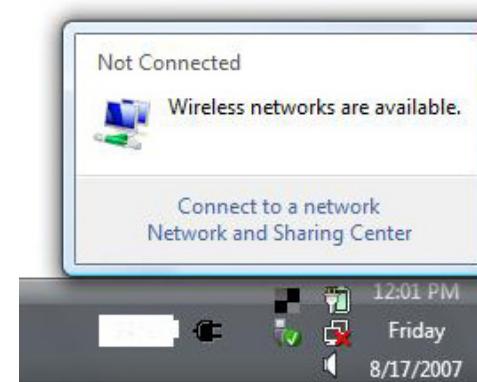
# Connect to a Wireless Network Using Windows Vista™

Windows® Vista™ users may use the built-in wireless utility. If you are using another company's utility or Windows® 2000, please refer to the user manual of your wireless adapter for help with connecting to a wireless network. Most utilities will have a "site survey" option similar to the Windows® Vista™ utility as seen below.

If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

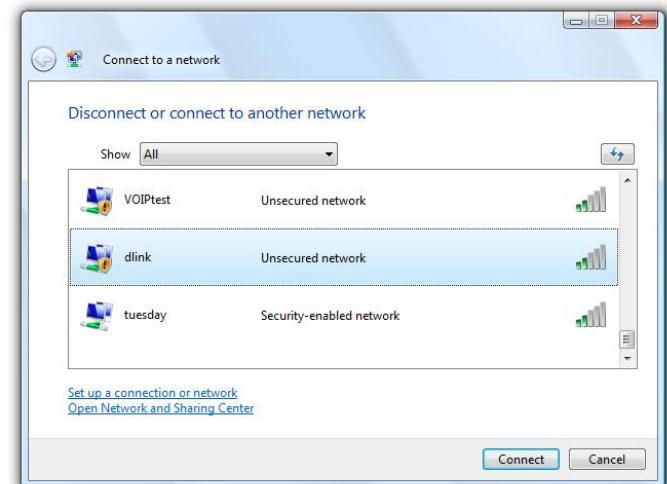
or

Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **Connect to a network**.



The utility will display any available wireless networks in your area. Click on a network (displayed using the SSID) and click the **Connect** button.

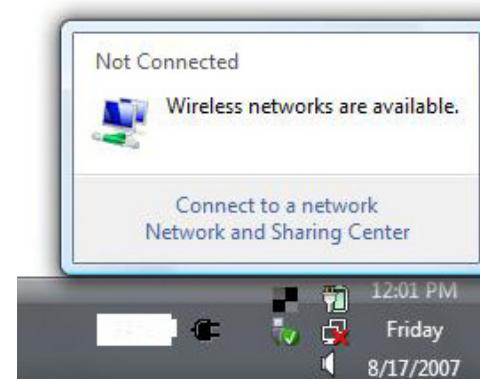
If you get a good signal but cannot access the Internet, check the TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



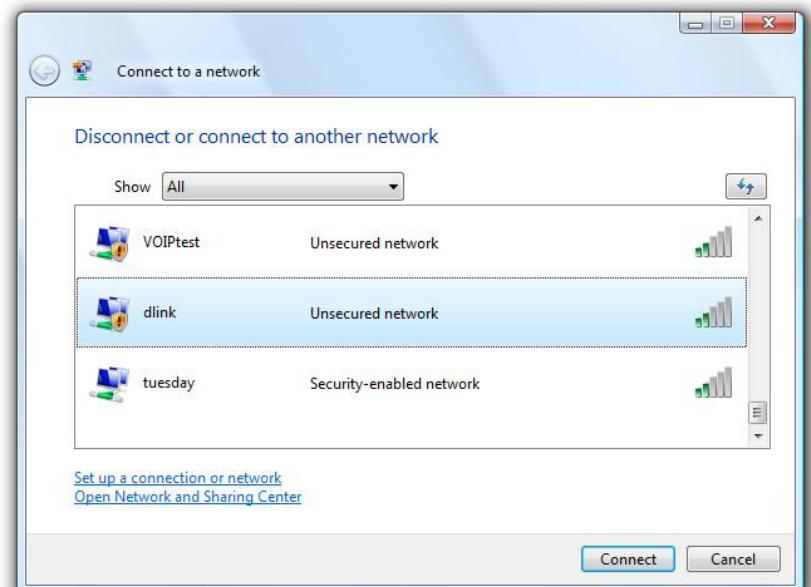
# Configure Wireless Security

It is recommended to enable wireless security (WEP/WPA/WPA2) on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the security key or passphrase being used.

1. Open the Windows® Vista™ Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower right corner of screen). Select **Connect to a network**.



2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. Enter the same security key or passphrase that is on your router and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the security settings are correct. The key or passphrase must be exactly the same as on the wireless router.



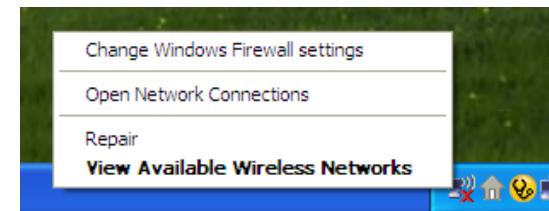
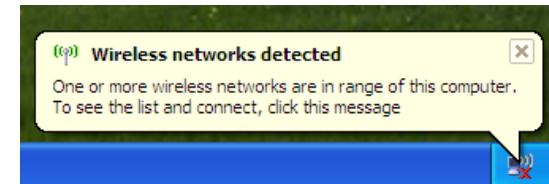
# Connect to a Wireless Network Using Windows® XP

Windows® XP users may use the built-in wireless utility (Zero Configuration Utility). The following instructions are for Service Pack 2 users. If you are using another company's utility or Windows® 2000, please refer to the user manual of your wireless adapter for help with connecting to a wireless network. Most utilities will have a "site survey" option similar to the Windows® XP utility as seen below.

If you receive the **Wireless Networks Detected** bubble, click on the center of the bubble to access the utility.

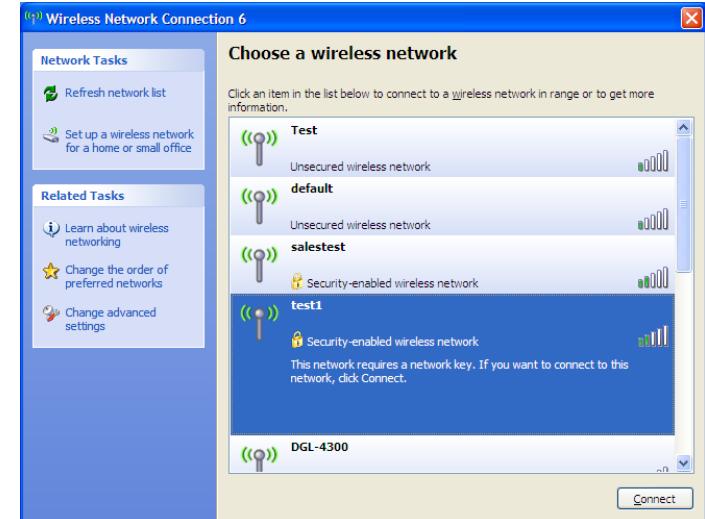
or

Right-click on the wireless computer icon in your system tray (lower-right corner next to the time). Select **View Available Wireless Networks**.



The utility will display any available wireless networks in your area. Click on a network (displayed using the SSID) and click the **Connect** button.

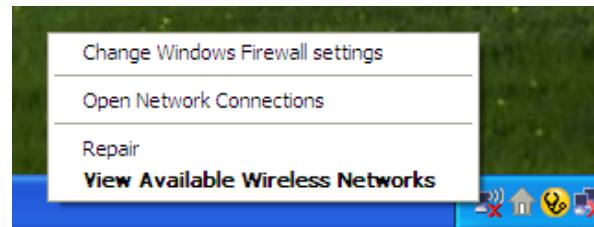
If you get a good signal but cannot access the Internet, check the TCP/IP settings for your wireless adapter. Refer to the **Networking Basics** section in this manual for more information.



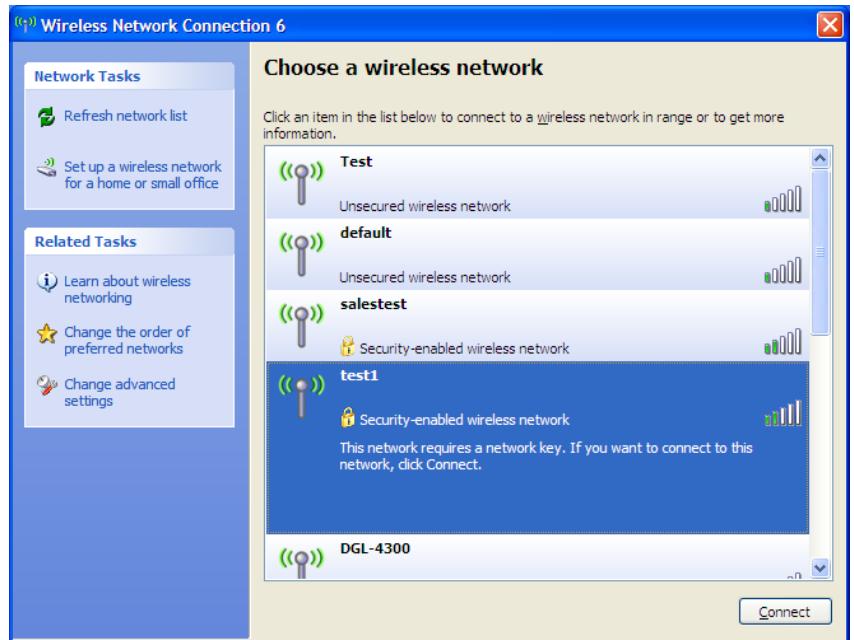
# Configure WEP

It is recommended to enable WEP on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WEP key being used.

1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.

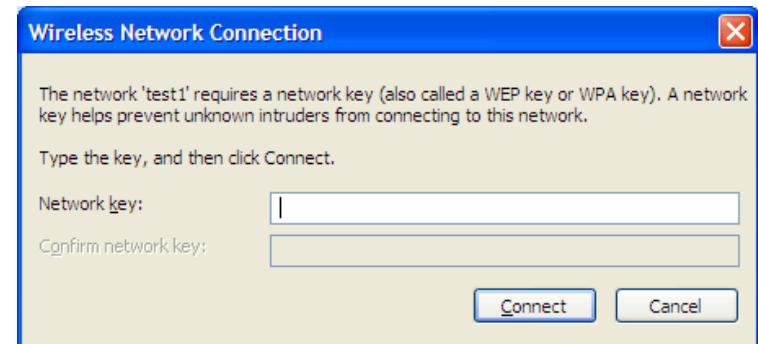


2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. The **Wireless Network Connection** box will appear. Enter the same WEP key that is on your router and click **Connect**.

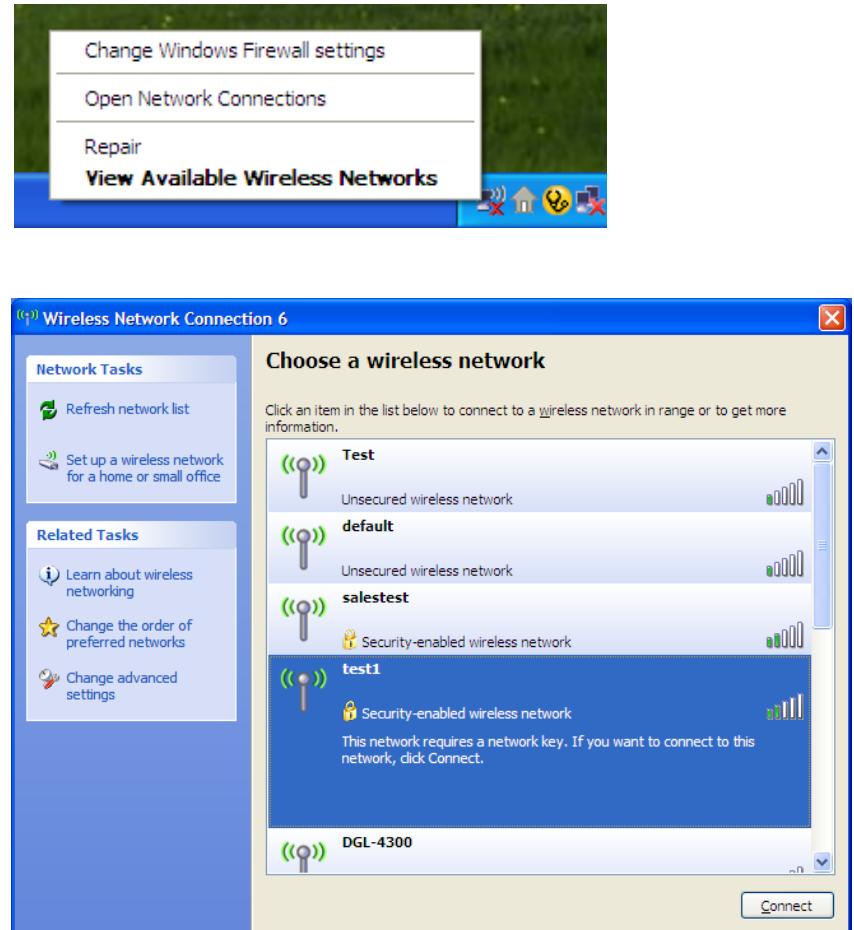
It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WEP settings are correct. The WEP key must be exactly the same as on the wireless router.



# Configure WPA-PSK

It is recommended to enable WPA on your wireless router or access point before configuring your wireless adapter. If you are joining an existing network, you will need to know the WPA key being used.

1. Open the Windows® XP Wireless Utility by right-clicking on the wireless computer icon in your system tray (lower-right corner of screen). Select **View Available Wireless Networks**.
2. Highlight the wireless network (SSID) you would like to connect to and click **Connect**.



3. The **Wireless Network Connection** box will appear. Enter the WPA-PSK passphrase and click **Connect**.

It may take 20-30 seconds to connect to the wireless network. If the connection fails, please verify that the WPA-PSK settings are correct. The WPA-PSK passphrase must be exactly the same as on the wireless router.



# Troubleshooting

This chapter provides solutions to problems that can occur during the installation and operation of the DWR-510. Read the following descriptions if you are having problems. (The examples below are illustrated in Windows® XP. If you have a different operating system, the screenshots on your computer will look similar to the following examples.)

## 1. Why can't I access the web-based configuration utility?

When entering the IP address of the D-Link router (192.168.0.1 for example), you are not connecting to a website on the Internet or have to be connected to the Internet. The device has the utility built-in to a ROM chip in the device itself. Your computer must be on the same IP subnet to connect to the web-based utility.

- Make sure you have an updated Java-enabled web browser. We recommend the following:
  - Internet Explorer 6.0 or higher
  - Netscape 8 or higher
  - Mozilla 1.7.12 (5.0) or higher
  - Opera 8.5 or higher
  - Safari 1.2 or higher (with Java 1.3.1 or higher)
  - Camino 0.8.4 or higher
  - Firefox 1.5 or higher
- Verify physical connectivity by checking for solid link lights on the device. If you do not get a solid link light, try using a different cable or connect to a different port on the device if possible. If the computer is turned off, the link light may not be on.
- Disable any internet security software running on the computer. Software firewalls such as Zone Alarm, Black Ice, Sygate, Norton Personal Firewall, and Windows® XP firewall may block access to the configuration pages. Check the help files included with your firewall software for more information on disabling or configuring it.

- Configure your Internet settings:
  - Go to **Start > Settings > Control Panel**. Double-click the **Internet Options** Icon. From the **Security** tab, click the button to restore the settings to their defaults.
  - Click the **Connection** tab and set the dial-up option to Never Dial a Connection. Click the LAN Settings button. Make sure nothing is checked. Click **OK**.
  - Go to the **Advanced** tab and click the button to restore these settings to their defaults. Click **OK** three times.
  - Close your web browser (if open) and open it.
- Access the web management. Open your web browser and enter the IP address of your D-Link router in the address bar. This should open the login page for your the web management.
- If you still cannot access the configuration, unplug the power to the router for 10 seconds and plug back in. Wait about 30 seconds and try accessing the configuration. If you have multiple computers, try connecting using a different computer.

### **2. How can I upgrade the firmware on the device?**

To update the firmware on the DWR-510, insert the device into an available USB port on your PC. Next, launch the firmware utility (FirmwareUpgrade.exe). Click the **Start** button to update the firmware. Please don't remove the DWR-510 while the upgrade is in progress. To finish the firmware update procedure, click the **OK** button.

**Note:** For update information, please follow the revision notice on the official web site.

### **3. I'm having problems installing the D-Link Connection Manager.**

Your antivirus program may be preventing installation of the software. Try disabling your antivirus software temporarily while you install the D-Link Connection Manager.

# Wireless Basics

D-Link wireless products are based on industry standards to provide easy-to-use and compatible high-speed wireless connectivity within your home, business or public access wireless networks. Strictly adhering to the IEEE standard, the D-Link wireless family of products will allow you to securely access the data you want, when and where you want it. You will be able to enjoy the freedom that wireless networking delivers.

A wireless local area network (WLAN) is a cellular computer network that transmits and receives data with radio signals instead of wires. Wireless LANs are used increasingly in both home and office environments, and public areas such as airports, coffee shops and universities. Innovative ways to utilize WLAN technology are helping people to work and communicate more efficiently. Increased mobility and the absence of cabling and other fixed infrastructure have proven to be beneficial for many users.

Wireless users can use the same applications they use on a wired network. Wireless adapter cards used on laptop and desktop systems support the same protocols as Ethernet adapter cards.

Under many circumstances, it may be desirable for mobile network devices to link to a conventional Ethernet LAN in order to use servers, printers or an Internet connection supplied through the wired LAN. A Wireless Router is a device used to provide this link.

## What is Wireless?

Wireless or Wi-Fi technology is another way of connecting your computer to the network without using wires. Wi-Fi uses radio frequency to connect wirelessly, so you have the freedom to connect computers anywhere in your home or office network.

## Why D-Link Wireless?

D-Link is the worldwide leader and award winning designer, developer, and manufacturer of networking products. D-Link delivers the performance you need at a price you can afford. D-Link has all the products you need to build your network.

## How does wireless work?

Wireless works similar to how cordless phone work, through radio signals to transmit data from one point A to point B. But wireless technology has restrictions as to how you can access the network. You must be within the wireless network range area to be able to connect your computer. There are two different types of wireless networks Wireless Local Area Network (WLAN), and Wireless Personal Area Network (WPAN).

### Wireless Local Area Network (WLAN)

In a wireless local area network, a device called an Access Point (AP) connects computers to the network. The access point has a small antenna attached to it, which allows it to transmit data back and forth over radio signals. With an indoor access point as seen in the picture, the signal can travel up to 300 feet. With an outdoor access point the signal can reach out up to 30 miles to serve places like manufacturing plants, industrial locations, college and high school campuses, airports, golf courses, and many other outdoor venues.

### Wireless Personal Area Network (WPAN)

Bluetooth is the industry standard wireless technology used for WPAN. Bluetooth devices in WPAN operate in a range up to 30 feet away.

Compared to WLAN the speed and wireless operation range are both less than WLAN, but in return it doesn't use nearly as much power which makes it ideal for personal devices, such as mobile phones, PDAs, headphones, laptops, speakers, and other devices that operate on batteries.

## Who uses wireless?

Wireless technology has become so popular in recent years that almost everyone is using it, whether it's for home, office, business, D-Link has a wireless solution for it.

### Home

- Gives everyone at home broadband access
- Surf the web, check e-mail, instant message, and etc
- Gets rid of the cables around the house
- Simple and easy to use

### Small Office and Home Office

- Stay on top of everything at home as you would at office
- Remotely access your office network from home
- Share Internet connection and printer with multiple computers
- No need to dedicate office space

## Where is wireless used?

Wireless technology is expanding everywhere not just at home or office. People like the freedom of mobility and it's becoming so popular that more and more public facilities now provide wireless access to attract people. The wireless connection in public places is usually called "hotspots".

Using a D-Link Cardbus Adapter with your laptop, you can access the hotspot to connect to Internet from remote locations like Airports, Hotels, Coffee Shops, Libraries, Restaurants, and Convention Centers.

Wireless network is easy to setup, but if you're installing it for the first time it could be quite a task not knowing where to start. That's why we've put together a few setup steps and tips to help you through the process of setting up a wireless network.

## Tips

Here are a few things to keep in mind, when you install a wireless network.

### Centralize your Router or Access Point

Make sure you place the router/access point in a centralized location within your network for the best performance. Try to place the router/access point as high as possible in the room, so the signal gets dispersed throughout your home. If you have a two-story home, you may need a repeater to boost the signal to extend the range.

### Eliminate Interference

Place home appliances such as cordless telephones, microwaves, and televisions as far away as possible from the router/access point. This would significantly reduce any interference that the appliances might cause since they operate on same frequency.

### Security

Don't let your next-door neighbors or intruders connect to your wireless network. Secure your wireless network by turning on the WPA or WEP security feature on the router. Refer to product manual for detail information on how to set it up.

# Wireless Modes

There are basically two modes of networking:

- **Infrastructure** – All wireless clients will connect to an access point or wireless router.
- **Ad-Hoc** – Directly connecting to another computer, for peer-to-peer communication, using wireless network adapters on each computer, such as two or more WNA-2330 wireless network Cardbus adapters.

An Infrastructure network contains an Access Point or wireless router. All the wireless devices, or clients, will connect to the wireless router or access point.

An Ad-Hoc network contains only clients, such as laptops with wireless cardbus adapters. All the adapters must be in Ad-Hoc mode to communicate.

# Networking Basics

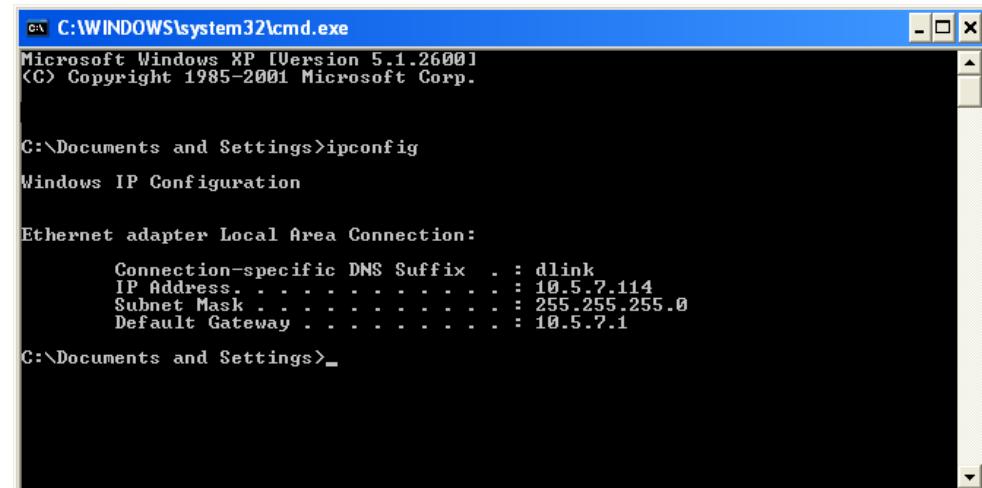
## Check your IP address

After you install your new D-Link adapter, by default, the TCP/IP settings should be set to obtain an IP address from a DHCP server (i.e. wireless router) automatically. To verify your IP address, please follow the steps below.

Click on **Start > Run**. In the run box type **cmd** and click **OK**. (Windows® Vista™ users type **cmd** in the **Start Search** box.)

At the prompt, type **ipconfig** and press **Enter**.

This will display the IP address, subnet mask, and the default gateway of your adapter.



```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings>ipconfig
Windows IP Configuration

Ethernet adapter Local Area Connection:
      Connection-specific DNS Suffix  . : dlink
      IP Address . . . . . : 10.5.7.114
      Subnet Mask . . . . . : 255.255.255.0
      Default Gateway . . . . . : 10.5.7.1

C:\Documents and Settings>_
```

If the address is 0.0.0.0, check your adapter installation, security settings, and the settings on your router. Some firewall software programs may block a DHCP request on newly installed adapters.

## Statically Assign an IP address

If you are not using a DHCP capable gateway/router, or you need to assign a static IP address, please follow the steps below:

### Step 1

Windows® Vista™ - Click on **Start > Control Panel > Network and Internet > Network and Sharing Center > Manage Network Connections.**

Windows® XP - Click on **Start > Control Panel > Network Connections.**

Windows® 2000 - From the desktop, right-click **My Network Places > Properties.**

### Step 2

Right-click on the **Local Area Connection** which represents your network adapter and select **Properties**.

### Step 3

Highlight **Internet Protocol (TCP/IP)** and click **Properties**.

### Step 4

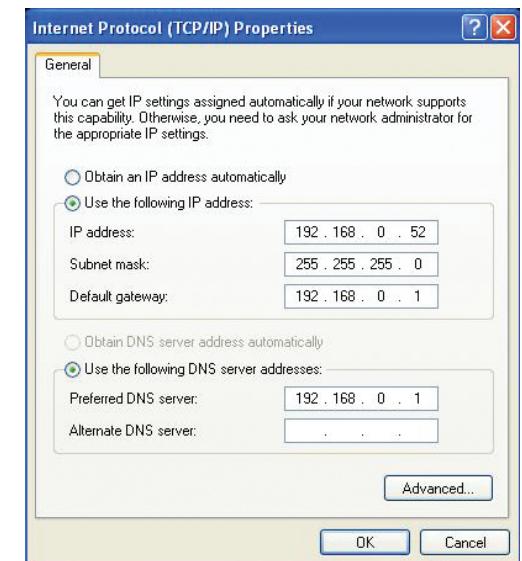
Click **Use the following IP address** and enter an IP address that is on the same subnet as your network or the LAN IP address on your router.

**Example:** If the router's LAN IP address is 192.168.0.1, make your IP address 192.168.0.X where X is a number between 2 and 99. Make sure that the number you choose is not in use on the network. Set Default Gateway the same as the LAN IP address of your router (192.168.0.1).

Set Primary DNS the same as the LAN IP address of your router (192.168.0.1). The Secondary DNS is not needed or you may enter a DNS server from your ISP.

### Step 5

Click **OK** twice to save your settings.



# Warnings and Declarations

## FCC Regulations:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## RF Exposure Information (SAR)

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the EUT transmitting at the specified power level in different channels.

The highest SAR value for the device as reported to the FCC is 1.52 W/kg when placed next to the body.

The FCC has granted an Equipment Authorization for this device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this device is on file with the FCC and can be found under the Display Grant section of [www.fcc.gov/oet/ea/fccid](http://www.fcc.gov/oet/ea/fccid) after searching on FCC ID: KA2WR530A1.

This device is in compliance with SAR for general population /uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C.

## Products with 2.4–GHz Wireless LAN Devices France

L'utilisation de cet équipement (2.4GHz wireless LAN) est soumise à certaines restrictions: cet équipement peut être utilisé à l'intérieur d'un bâtiment en utilisant toutes les fréquences de 2400 à 2483.5MHz (Chaîne 1–13). Pour une utilisation en environnement extérieur, les fréquences comprises entre 2400-2454 MHz (Chaîne 1-9) peuvent être utilisées. Pour les dernières restrictions, voir <http://www.art-telecom.fr>.

For 2.4–GHz wireless LAN operation of this product, certain restrictions apply. This equipment may use the entire 2400–MHz to 2483.5–MHz frequency band (channels 1 through 13) for indoor applications. For outdoor use, only 2400-2454 MHz frequency band (channels 1-9) may be used. For the latest requirements, see <http://www.art-telecom.fr>.

### Wireless LAN Module's Maximum EIRP

| Frequency Ranges (MHz)  | Indoors | Outdoors   |
|-------------------------|---------|--|
| 2400 MHz ~ 2446.5 MHz   | 10mW    | Not Permitted  |
| 2446.5 MHz ~ 2483.5 MHz | 100mW   | 100mW on private property with Ministry of Defense approval. |

## Declaration of Conformity

### 1. Health (Article 3.1(a) of the R&TTE Directive)

Applied Standard(s):

EN62311: 2008/ IEC 62209-2:2010

### 2. Safety (Article 3.1(a) of the R&TTE Directive)

Applied Standard(s):

EN 60950-1:2006+A11:2009

### 3. Electromagnetic compatibility (Article 3.1 (b) of the R&TTE Directive)

Applied Standard(s):

EN 301 489-1 V1.8.1/-7 V1.3.1/-17 V2.1.1/-24 V1.4.1

### 4. Radio frequency spectrum usage (Article 3.2 of the R&TTE Directive)

Applied Standard(s):

EN 301 511 V9.0.2

EN 301 908-1 V4.2.1/-2 V4.2.1

EN 300 328 V1.7.1

### 5. EMC Directive (2004/108 /EC)

Applied Standard(s):

EN55024: 1998/A1:2001/A2:2003

## Caution

-Users have to use the connection to USB interfaces with USB 2.0 version or higher.

-Risk of explosion if battery is replaced by an incorrect type.

-Dispose of used batteries according to the instructions.

-Please make sure the temperature for adapter will not be higher than 55 °C

# Technical Specifications

## GSM Band (GSM/GPRS/EDGE)

- 850/900/1800/1900 MHz
- Power Class 4 (850/900 MHz)
- Power Class 1 (1800/1900 MHz)

## UMTS/HSDPA Band \*

- 850/1900 MHz
- 850/2100 MHz
- 900/2100 MHz
- Power Class 3 (+24 dBm)

## Data Rates \*\*

- DL: 7.2 Mbps
- UL: 5.76 Mbps

## Standards

- 802.11g/b, compatible with 802.11n devices

## Wireless Security

- 64/128-bit WEP (Wired Equivalent Privacy)
- WPA & WPA2 (Wi-Fi Protected Access)

## Firewall

- Built-in NAT
- Built-in firewall

## Antenna

- Internal 3G and Wi-Fi antenna

## LED Status Indicator

- Signal LED

## Dimensions (L x W x H)

- 90 x 28 x 11 mm

## Operating Temperature

- -10 to 55 °C (14 to 131 °F)

## Operating Humidity

- 10% to 90% (Non-condensing)

## Certifications

- CE
- FCC

\* Supported frequency band is dependent upon regional hardware version.

\*\* Maximum wireless signal rate derived from IEEE Standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Environmental factors will adversely affect wireless signal range.